

IN THE CLAIMS:

1. (currently amended) A transmission type illumination device for stereomicroscopes, at least comprising:

a light source;

a collector lens located on an exit side of said light source;

a diffuser located on an exit side of said collector lens;

a convex lens located on an exit side of said diffuser;

a polarizing deflection mirror located on an exit side of said convex lens to change an optical axis of said light source;

at least one lens element located on an exit side of said polarizing deflection mirror and nearest to a view surface side; and

an optical element having a periodical structure in a one-dimensional direction, said optical element being interposed between said polarizing deflection mirror and said at least one lens element.

2. (original) The transmission type illumination device according to claim 1, wherein the optical element having a periodical structure in a one-dimensional direction satisfies the following condition (1) with respect to an angle α for splitting a light beam incident on the optical element:

$$0.5D/L < \tan\alpha < 0.9D/L \quad \dots (1)$$

where D is a effective diameter of a secondary light source, and L is a distance from the optical element having a periodical structure in a one-dimensional direction to the secondary light source.

3. (previously presented) A stereomicroscope incorporating a transmission type illumination system which comprises a transmission type illumination device according to claim 1, wherein an angular aperture for illumination of an object under observation fully satisfies a pupil of a viewing optical system, wherein said angular aperture has an aspect ratio of 1:1.2 to 1:2.